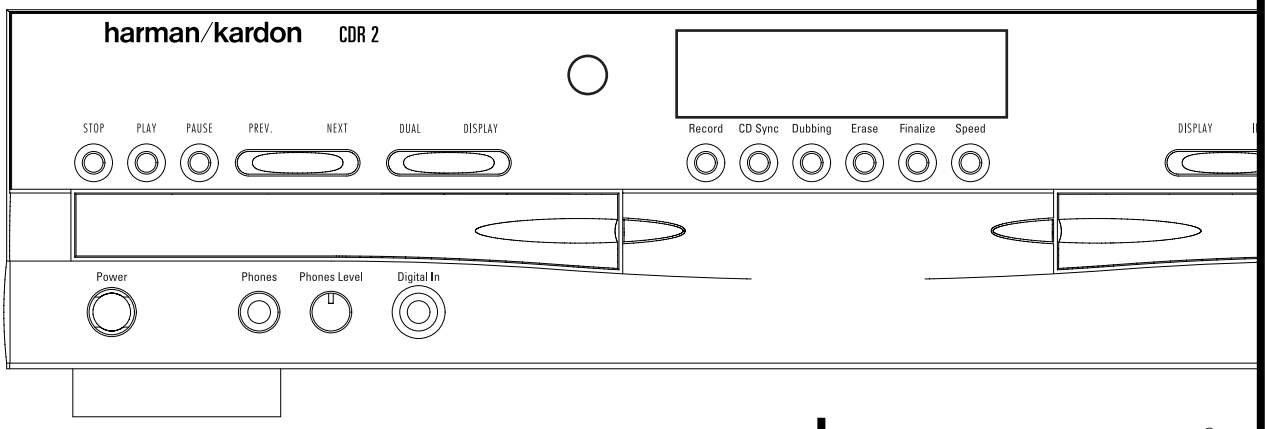
CDR 2 CD Recorder

OWNER'S MANUAL



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Typographical Conventions
In order to help you use this manual with the remote control, front-panel controls and rear-panel connections, certain conventions have been used.

EXAMPLE – (bold type) indicates a specific remote control or front-panel button, or rear-panel connection jack

EXAMPLE – (OCR type) indicates a message that is visible on the front-panel information display

EXAMPLE – (outlined type) indicates a lit indicator in the front-panel information display

1 – (number in a square) indicates a specific front-panel control

❶ – (number in an oval) indicates a button or indicator on the remote

❶ – (number in a circle) indicates a rear-panel connection

A – (letter in a square) indicates an indicator in the front-panel display

Introduction

Thank you for choosing Harman Kardon. The CDR 2 Dual-Deck CD Player/Recorder is a unique product, designed not only to play back your existing library of compact discs, but also to record compact discs from either analog or digital programs. You may feed signals (for recording) to the CDR 2 from external sources such as an A/V receiver, a tuner, a tape deck or a CD player, or you may simply place a CD in one deck, and make a copy using a recordable CD in the other deck.

Designed and engineered by Harman Kardon, the CDR 2 is the world's first audio CD recorder with 4x speed capability. This means that it will take only 15 minutes to copy a 60-minute disc.

The CDR 2 not only records with the highest speed and quality available but it is also an audiophile CD player. Through the use of AKM digital-to-analog converters (DACs), the CDR 2's performance rivals the most sophisticated high-end players. Should you wish to bypass the internal DACs and use an external digital processor, both coax and optical-digital outputs are available. Thanks to the CDR 2's dual-tray design, you may even play back two separate discs at the same time, for parties or multi-room applications. To make CD playback more enjoyable, the CDR 2 also features a wide range of program and repeat functions.

Since CD recorders are a relatively new technology, this may be your first CD-R product. Although CD recorders resemble play-only CD machines in many ways, there are some important differences between a standard CD and a CD-R. In addition, making a CD-R recording is also a different process than what you may be familiar with for making audio tape or cassette recordings. For that reason, we encourage you to read through this manual so that you are fully acquainted with the way CD recording works. This small investment in your time will pay major dividends in the enjoyment that will result from proper use of the CDR 2.

If you have additional questions about this product – its installation or operation – that are not answered in this manual, please contact your dealer, who is your best source of local information. You may also contact Harman Kardon via e-mail through our Web site at www.harmankardon.com.

Special Features

- **Dual-Deck CD Player and CD-R/CD-RW Recorder**
- **4X Dub Speed for Both CD-R and Erasable CD-RW Discs**
- **Audiophile-Grade AKM Digital-to-Analog Converters for Highest Audio Quality**
- **Dual-Play Capability**
- **Extensive Playback Programming Capabilities**
- **Optical and Coaxial Digital Inputs and Outputs**
- **Front-Panel Coaxial Digital Input for Use with Portable Devices**
- **Sample-Rate Convertor Allows Use of DAT Players as Digital Source**
- **Ergonomic Remote Control**

CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: To prevent electric shock, do not remove the grounding plug on the power cord, or use any plug or extension cord that does not have a grounding plug provided. Make certain that the AC outlet is properly grounded. Do not use an adapter plug with this product.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Important Information About CD Recording

In order to get the most enjoyment from your new CD-R recorder, please pay special attention to the following sections of the manual that provide information about the special features and capabilities of CD Recorders.

- The CDR 2 plays all standard CD audio discs but for recording, the CDR 2 uses special CD-R and CD-RW discs designed only for audio use. CD-R discs designed for computer use will not work in the CDR 2. See page 14 for more information on which types of discs are used with the CDR 2.
- The last step in making a CD-R recording is the finalization process. Unless this step is properly done, the disc will not work in other players. See page 22 for information on finalizing discs.
- Once finalized, CD-R discs will play in any CD player, but CD-RW discs will only play in the CDR 2 and certain other machines. Check the specifications of your CD player if you have questions about compatibility with CD-RW discs.
- As with all CD players, except those designed specifically for portable use, you should never move a CD player while there is a disc inside one of the decks. **NEVER** move the CDR 2 until discs have been removed from both decks.

Important Safety Information

Verify Line Voltage Before Use
Your CDR 2 has been designed for use with 120-volt AC current. Connection to a line voltage other than that for which it is intended can create a safety and fire hazard and may damage the unit.

If you have any questions about the voltage requirements for your specific model, or about the line voltage in your area, contact your selling dealer before plugging the unit into a wall outlet.

Do Not Use Extension Cords
We do not recommend that extension cords be used with this product. As with all electrical devices, do not run power cords under rugs or carpets or place heavy objects on them. Damaged power cords should be replaced immediately by an authorized service depot with cords meeting factory specifications.

Handle the AC Power Cord Gently
When disconnecting the power cord from an AC outlet, always pull the plug, never pull the cord. If you do not intend to use the unit for any considerable length of time, disconnect the plug from the AC outlet.

Do Not Open the Cabinet
There are no user-serviceable components inside this product. Opening the cabinet may present a shock hazard, and any modification to the product will void your guarantee. If water or any metal object such as a paper clip, wire or a staple accidentally falls inside the unit, disconnect it from the AC power source immediately, and consult an authorized service station.

CAUTION: The CDR 2 uses a laser system. To prevent direct exposure to the laser beam, do not open the cabinet enclosure or defeat any of the safety mechanisms provided for your protection. DO NOT STARE INTO THE LASER BEAM. To ensure proper use of this product, please read this owner's manual carefully and retain it for future use. Should the unit require maintenance or repair, please contact your local Harman Kardon service station. Refer servicing to qualified personnel only.

Installation Location

- To assure proper operation and to avoid the potential for safety hazards, place the unit on a firm and level surface. When placing the unit on a shelf, be certain that the shelf and any mounting hardware can support the weight of the product.
- Make certain that proper space is provided both above and below the unit for ventilation. If this product will be installed in a cabinet or other enclosed area, make certain that there is sufficient air movement within the cabinet.
- Do not place the unit directly on a carpeted surface.
- Avoid installation in extremely hot or cold locations, or an area that is exposed to direct sunlight or heating equipment.
- Avoid moist or humid locations.
- Do not obstruct the ventilation slots on the top of the unit, or place objects directly over them.

Cleaning
When the unit gets dirty, wipe it with a clean, soft dry cloth. If necessary, wipe it with a soft cloth dampened with mild soapy water, then a fresh cloth with clean water. Wipe dry immediately with a dry cloth. NEVER use benzene, aerosol cleaners, thinner, alcohol or any other volatile cleaning agent. Do not use abrasive cleaners, as they may damage the finish of metal parts. Avoid spraying insecticide near the unit.

Moving the Unit
Before moving the unit, be certain to disconnect any interconnection cords with other components, and make certain that you disconnect the unit from the AC outlet.

IMPORTANT NOTE: To avoid damage to the CDR 2 which may not be covered by the warranty, be certain that all discs are removed from the unit before it is moved. Once the CDR 2 is placed installed, discs may be left in the unit when it is turned off, but the unit should NEVER be moved with discs left in either deck.

Important Information for the User
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. The limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept interference received, including interference that may cause undesired operation.

NOTE: Changes or modifications may cause this unit to fail to comply with Part 15 of the FCC Rules and may void the user's authority to operate the equipment.

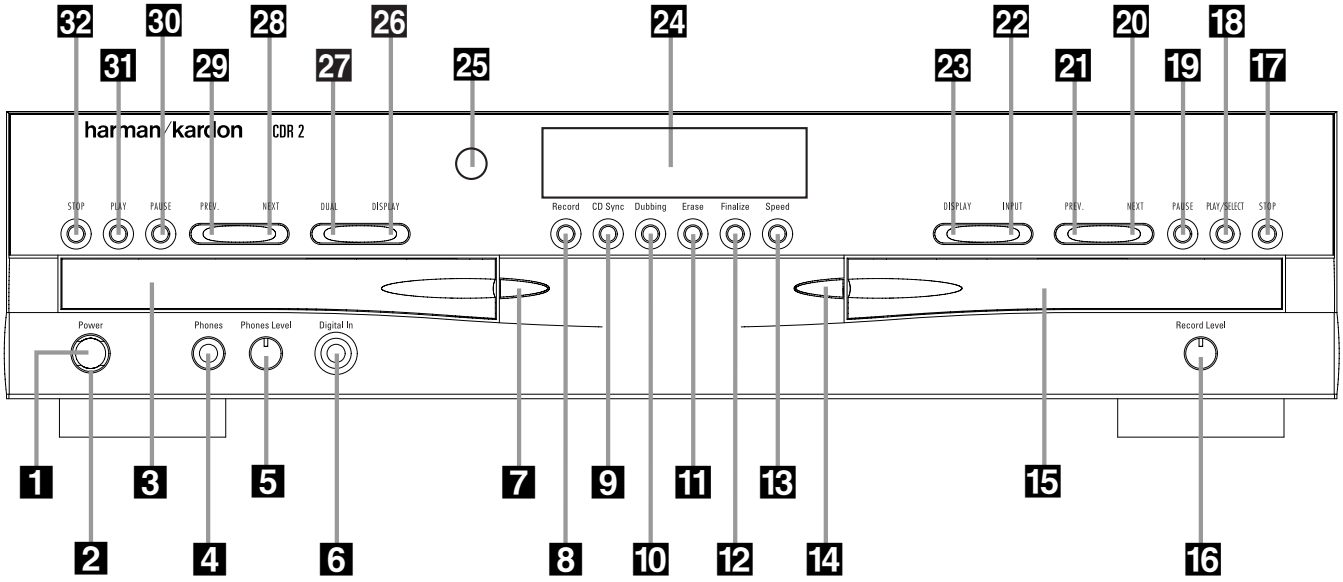
Unpacking

The carton and shipping materials used to protect your new receiver during shipment were specially designed to cushion it from shock and vibration. We suggest that you save the carton and packing materials for use in shipping if you move, or should the unit ever need repair.

To minimize the size of the carton in storage, you may wish to flatten it. This is done by carefully slitting the tape seams on the bottom and collapsing the carton down to a more two-dimensional appearance. Other cardboard inserts may be stored in the same manner. Packing materials that cannot be collapsed should be saved along with the carton in a plastic bag.

If you do not wish to save the packaging materials, please note that the carton and other sections of the shipping protection are recyclable. Please respect the environment and discard those materials at a local recycling center.

Front-Panel Controls



1 Power Switch
2 Status-Mode Indicator
3 Play Deck
4 Headphone Jack
5 Headphone Level Control
6 Digital Input
7 Play-Deck Open
8 Record Button
9 CD Sync
10 Dubbing
11 Erase
12 Finalize
13 Speed
14 Record-Deck Open
15 Record Deck
16 Analog-Record Level Control
17 Record-Deck Stop
18 Record-Deck Play/Select
19 Record-Deck Pause
20 Record-Deck Next
21 Record-Deck Previous
22 Input Select
23 Record-Deck Display Select
24 Information Display
25 Remote Sensor
26 Play-Deck Display Select
27 Dual-Play Selector
28 Play-Deck Next
29 Play-Deck Previous
30 Play-Deck Pause
31 Play-Deck Play
32 Play-Deck Stop

1 Power Switch: Press this switch to apply power to the CDR 2. When the unit is first turned on, the **Status-Mode Indicator 2** surrounding the switch will turn green. Once the unit has been turned on with this switch, it may be operated from either the front panel or remote control. Press the switch again to turn the unit completely off.

2 Status-Mode Indicator: When the CDR 2 is in the ON mode, this indicator will glow green. When the unit has been placed in the Standby mode by pressing the **Power-Off** button 32 on the remote, the indicator will glow amber, indicating that the unit is still connected to the AC main supply and is ready to be turned on from the remote control.

3 Play Deck: This disc deck is used to play back conventional CD discs and CD-R or CD-RW discs that have been finalized.

4 Headphone Jack: Connect standard headphones to this jack for private listening.

5 Headphone Level Control: Turn this control to adjust the volume level to the headphones. Note that the use of this control will not change the analog output levels at the rear-panel audio outputs ❶❷.

6 Digital Input: This coaxial digital input may be used to connect a portable digital audio player to the CDR 2 for digital recording. When an active digital signal is connected to both the front- and rear-panel coaxial inputs, the source connected to the front-panel input will be selected for recording.

7 Play-Deck Open: Press this button to open the Play Deck **3**.

8 Record Button: Press this button to begin the recording process. See pages 20-22 for more information on CD recording.

9 CD Sync: Press this button once to begin an automated recording of a single track from an external CD player when a digital connection is used. Press it twice to begin automated recording of an entire disc. See page 21 for more information on CD Sync recording.

10 Dubbing: Press this button to begin the process of making a complete copy of the disc in the Play Deck **3** to a CD-R or CD-RW disc in the Record Deck **15**. See page 20 for more information on dubbing.

11 Erase: Press this button to erase one or more tracks or the entire contents of an unfinalized CD-RW disc. When a CD-RW disc has already been finalized you may erase the entire disc or you may "unfinalize" the disc by erasing the TOC data. See page 22 for more information on erasing CD-RW discs.

12 Finalize: Press this button when a recording is complete to initiate the finalization process. **The Play/Select Button 18 10** must be pressed within three seconds to activate finalization. Until this button is pressed and the finalization process is complete, CD-R discs may not be played on conventional CD machines. See page 22 for more information on finalization.

13 Speed: Press this button to select the recording speed for internal dubs. See page 20 for more information on selecting the proper speed.

14 Record-Deck Open: Press this button to open the Record Deck **15**.

15 Record Deck: This Disc Deck is used to play back CD, CD-R and CD-RW discs; it is also used for recording CDs.

16 Analog-Record Level Control: The control is used to adjust the input level when making recordings from analog sources such as cassettes, or when CDs are recorded in an analog mode. See page 21 for more information on record levels.

17 Record-Deck Stop: Press this button to stop the CD in the Record Deck.

18 Record-Deck Play/Select: This button has two functions. It may be pressed when a standard CD is in the Record Deck to put the machine in play, or it may be used to enter a selection or start certain record functions.

19 Record-Deck Pause: When the Record Deck is in the Play mode, pressing this button will pause the disc. If the disc has previously been paused, pressing this button will restart the playback.

20 Record-Deck Next: This button has two functions. When a disc is playing in the Record Deck **15**, press and hold this button to play the disc in a fast-forward mode to quickly locate a desired passage. At any time, tapping the button and quickly releasing it will move to the next track on a disc in play, or enter the track for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button **18 8**.

21 Record Deck Previous: This button has two functions. When a disc is playing in the Record Deck **15**, press and hold this button to play the disc in a fast reverse mode to quickly locate a desired passage. At any time, tapping the button and quickly releasing it will move to the beginning of the current track, and the next press will move to the previous track. When a disc is stopped, each press will move back one for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button **18 8**.

22 Input Select: Press this button to select the input source (analog, digital coax or digital optical) for recording. See page 21 for more information on input selection.

23 Record-Deck Display Select: Press this button to cycle through the time display options for the Record Deck. See page 17 for more information on the time display.

24 Information Display: The indicators in the Information Display provide status reports on the operation of the CDR 2. See page 7 for complete explanations of each indicator.

25 Remote Sensor: The IR sensor that receives the commands from the remote control is behind this area. Do not cover or obscure this part of the front panel to avoid any malfunction with the remote.

26 Play-Deck Display Select: Press this button to cycle through the time display options for the Play Deck. See page 17 for more information on the time display.

27 Dual-Play Selector: Press this button to enable both CD Decks to playback at the same time and function as separate, independent CD units. In this mode it is also possible to record from an external source while the Play Deck is functioning as a standard CD player. See page 17 for more information on dual-play capability.

28 Play-Deck Next: This button has two functions. When a disc is playing in the Play Deck **3**, press and hold this button to play the disc in a fast-forward mode to quickly locate a desired passage. At any time, tapping the button and quickly releasing it will move to the next track on a disc in play, or enter the track for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button **31 8**.

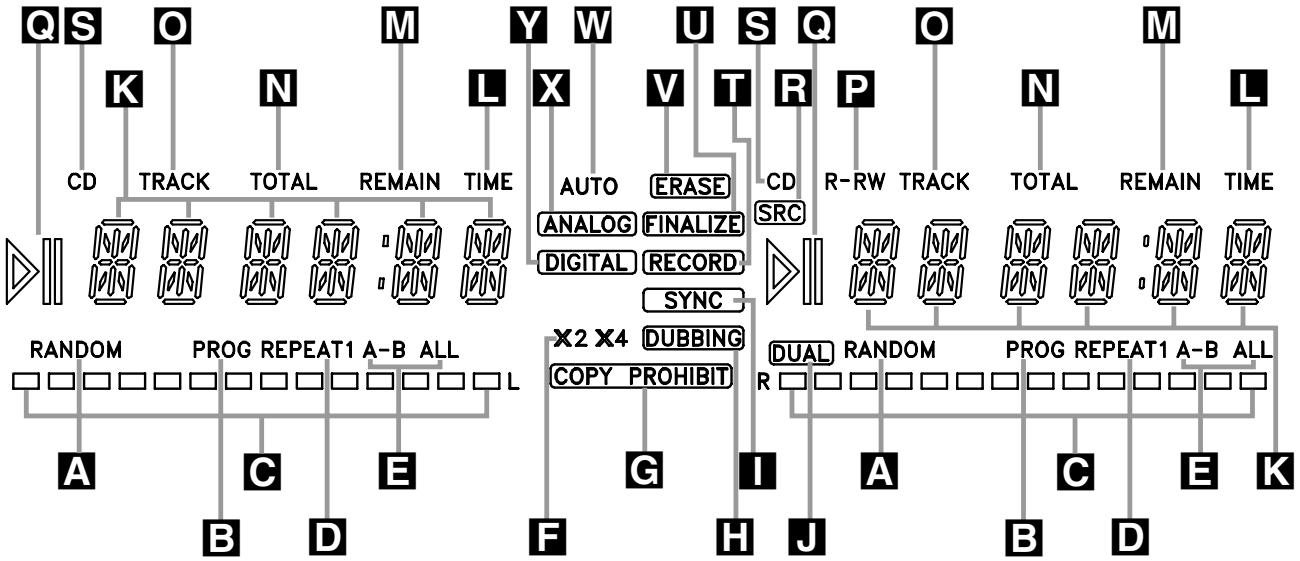
29 Play-Deck Previous: This button has two functions. When a disc is playing in the Play Deck **3**, press and hold this button to play the disc in a fast-reverse mode to quickly locate a desired passage. At any time, tapping the button and quickly releasing it will move to the beginning of the current track, and the next press will move to the previous track. When a disc is stopped, each press will move back one for programming or play when the disc is stopped. Once a track is entered, it may be played by simply pressing the **Play** button **31 8**.

30 Play-Deck Pause: When the Play Deck is running, pressing this button will pause the disc. If the disc has previously been paused, pressing this button will restart the playback .

31 Play-Deck Play: Press this button to begin playback of a CD in the Play Deck or the dubbing process.

32 Play-Deck Stop: Press this button to stop the CD in the Play Deck.

Front-Panel Information Display



A Random Indicators
B Program Indicators
C Level Indicators
D Repeat Indicators
E Repeat-Status Indicators
F Speed Indicators
G Copy-Prohibit Indicator
H Dubbing Indicator
I Sync Indicator
J Dual-Play Indicator
K Information Displays
L Time Indicators
M Remaining-Time Indicators
N Total-Time Indicators
O Track-Time Indicators
P R/RW Indicator
Q Play/Pause Indicators
R Sample-Rate Converter
S CD Indicators
T Record Indicator
U Finalize Indicator
V Erase Indicator
W Auto Indicator
X Analog Indicator
Y Digital Indicator

Important Note: Since the CDR 2 is a dual-deck player/recorder, there are two separate sets of indicators for the Random, Program, Repeat, Repeat Status, Time, Total Time and Track Time. In addition, there is a separate Information Display, Play/Pause Indicator and CD Indicator for each deck. As the function of these indicators is identical for both decks, they are described in this manual with a common letter. When the CDR 2 is playing or recording a disc, any indicators that light on the left side of the display describe to the status of the Play Deck, while those that light on the right side of the display describe the status of the Record Deck. Depending on the activity of the unit and the settings you select, different indicators may light on the two sides at the same time.

A Random Indicators: These indicators light when random playback has been programmed for one of the CD decks. See page 16 for more information on random play.

B Program Indicators: These indicators light when one of the CD decks is being programmed for playback options. See page 16 for more information on programmed play.

C Level Indicators: These LEDs display the input level during an analog recording, and the output level during playback. See page 21 for more information on record levels.

D Repeat Indicator: This indicator lights when a repeat function is being used. See page 18 for more information on repeat play.

E Repeat-Status Indicator: These indicators display the type of repeat function being used. See page 18 for more information on repeat status.

F Speed Indicators: These indicators show which record speed has been selected for dub recordings. See page 20 for more information on record-speed selection.

G Copy-Prohibit Indicator: This indicator lights when a recording is not possible due to the intervention of the Serial Copy Management System (SCMS). See page 20 for more information on SCMS.

H Dubbing Indicator: This indicator lights when a dub is in progress between the two CD Decks. See page 20 for more information on CD dubbing.

I Sync Indicator: This indicator lights when the unit has been programmed for a CD Sync recording. See page 21 for more information on CD Sync recordings.

J Dual Play Indicator: The indicator lights when the unit is playing in the Dual mode, which allows both CD Decks to act as playback decks at the same time. See page 17 for more information on the dual-play mode.

K Information Display: This display serves two functions, showing the time displays for discs playing, as well as displaying messages about discs or recordings.

L Time Indicator: This indicator lights in conjunction with one of the time indicators **O P Q** to show which of the time status modes is active.

M Remaining-Time Indicator: This indicator lights when the Information Display **K** shows the time remaining on a disc.

N Total Time: This indicator lights when the Information Display **K** shows the total time of all tracks on a disc.

O Track Time: This indicator lights when the Information Display **K** shows the running time of the individual track being played.

P R/RW Indicator: This indicator shows which type of recordable disc is present in the Record Deck **15**. When a CD-R disc is present, only the R is lit. The RW lights when an erasable CD-RW disc is in use.

Q Play/Pause Indicator: These indicators show the status of the individual CD Decks. The ▷ lights when the CD is playing, and the ▷II lights when the unit is in a Pause mode.

R Sample-Rate Converter: This indicator lights when the Sample-Rate Converter is in use to change the digital sample rate when the incoming signal is not the standard 44.1kHz used by standard CDs. This is an automatic function and does not require any user intervention.

S CD Indicator: This indicator lights when a standard CD is playing in either deck **3** or **15**.

T Record Indicator: This indicator lights when the unit is making a recording and flashes during the preparations for recording.

U Finalize Indicator: This indicator lights when the unit is in the Finalization process, which is required before a CD-R disc may be played on a standard CD machine. See page 22 for more information on Finalization.

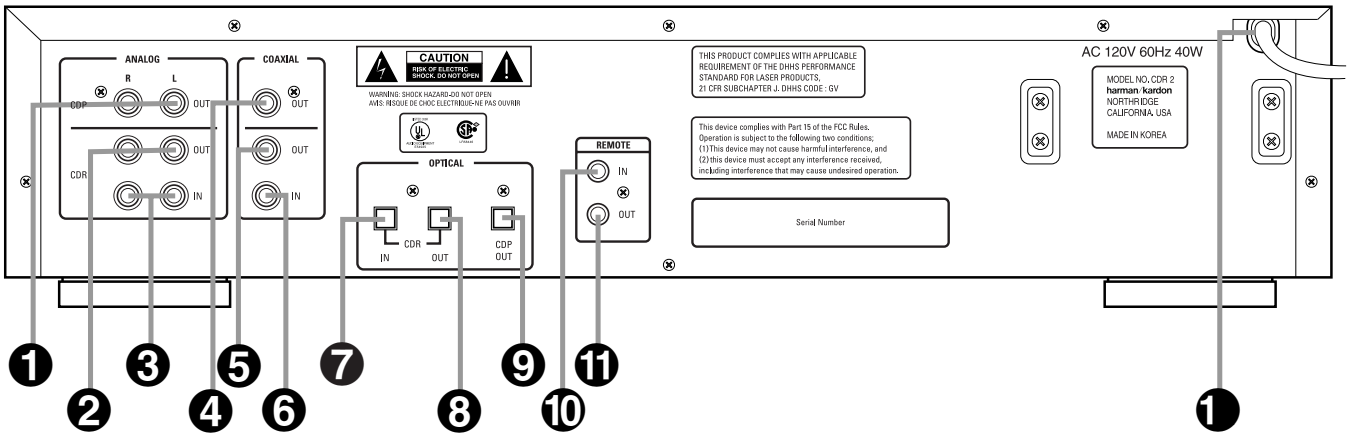
V Erase Indicator: This indicator lights when a CD-RW disc is being erased. Note that only CD-RW discs may be erased; it is not possible to erase a CD-R disc. See page 22 for more information on erasing discs.

W Auto Indicator: This indicator lights when the automatic method of incrementing tracks is selected for a recording session.

X Analog Indicator: This indicator lights when an analog source is being recorded. See page 20 for more information on source selection.

Y Digital Indicator: This indicator lights when an digital source is being recorded. See page 20 for more information on source selection.

Rear-Panel Connections



❶ Play (CDP)-Deck Analog Output
❷ Record (CDR)-Deck Analog Output
❸ Record (CDR)-Deck Analog Input
❹ Play (CDP)-Deck Coaxial-Digital Output
❺ Record (CDR)-Deck Coaxial-Digital Output
❻ Record (CDR)-Deck Coaxial-Digital Input
❼ Record (CDR)-Deck Optical-Digital Input
❽ Record (CDR)-Deck Optical-Digital Output
❾ Play (CDP)-Deck Optical-DIgital Output
❿ Remote IR Input
⓫ Remote IR Output
❶ AC Power Cord

❶ Play (CDP)-Deck Analog Output: These jacks carry the analog audio output signal from the **Play Deck 3**. Connect them to the CD input jacks on a receiver, preamp or processor.

❷ Record (CDR)-Deck Analog Output: These jacks carry the output signal from the **Record Deck 15**. Connect them to the **Tape Play/In** input jacks on a receiver, preamp or processor.

❸ Record (CDR)-Deck Analog Input: These jacks accept the analog signals that are used for CD recordings. Connect them to the Tape Rec/Play outputs on a receiver, preamp or processor.

❹ Play (CDP)-Deck Coaxial-Digital Output: This jack carries the digital-audio output signal from the **Play Deck 3**. Connect it to a coaxial-digital input on a receiver, processor or digital decoder.

❺ Record (CDR)-Deck Coaxial-Digital Output: This jack carries the digital audio output signal from the **Record Deck 15**. Connect it to a coaxial digital input on a receiver, processor or digital decoder.

❻ Record (CDR)-Deck Coaxial-Digital Input: This jack accepts the digital-audio input signal from a compatible digital audio product and should be connected directly to a digital player or to a coaxial-digital output on a CD or DVD player or an A/V receiver or processor.

IMPORTANT NOTE: The coaxial digital inputs should only be connected to **digital** input or output jacks. Even though they use the same RCA type connector as standard analog audio connections, DO NOT connect them to conventional analog input or output jacks.

❼ Record (CDR)-Deck Optical-Digital Input: This jack accepts the digital-audio input signal from a compatible digital audio product, and should be connected directly to the optical-digital output on a CD or DVD player or an A/V receiver or processor.

❽ Record (CDR)-Deck Optical-Digital Output: This jack carries the digital audio output signal from the **Record Deck 15**. Connect it to an optical digital input on a receiver, processor or digital decoder.

❾ Play (CDP)-Deck Optical-Digital Output: This jack carries the digital audio output signal from the **Play Deck 3**. Connect it to an optical-digital input on a receiver, processor or digital decoder.

❿ Remote IR Input: Connect the output of a remote infrared sensor or the remote control output of another compatible Harman Kardon product to this jack. This will enable the remote control to operate even when the front-panel **Remote Sensor 25** is blocked. This jack may also be used with compatible IR remote control based automation systems.

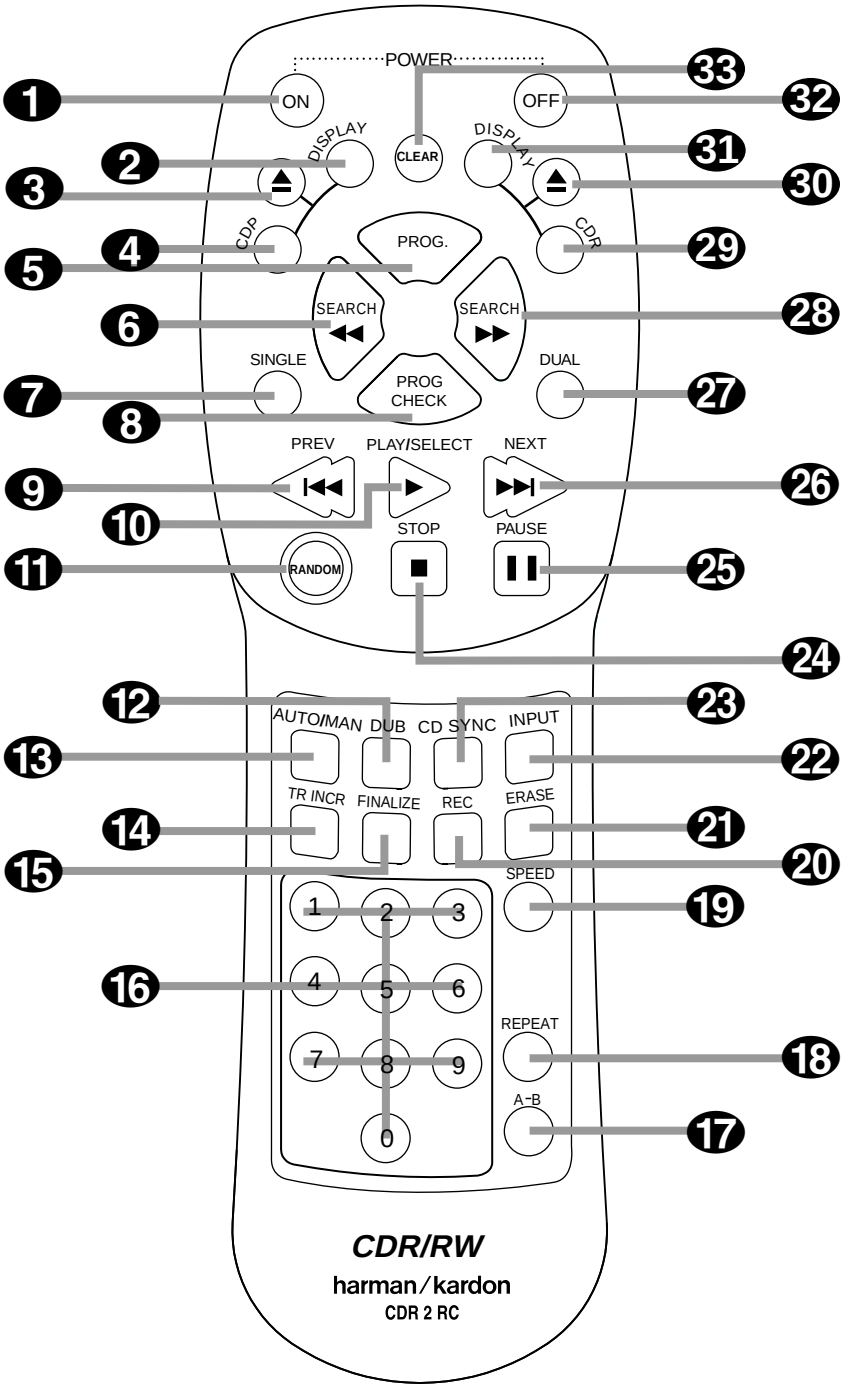
⓫ Remote IR Output: Connect this jack to the IR input jack of another compatible Harman Kardon remote controlled product to have the built-in remote sensor **25** on the CDR 2 provide IR signals to other compatible products.

❶ AC Power Cord: Connect this plug to an AC outlet. If the outlet is switch controlled, make certain that it is in the **ON** position.

Remote Control Functions

1. Power-On Button
2. Play (CDP)-Deck Display Control
3. Play (CDP)-Deck Open
4. Play (CDP)-Deck Select
5. Program
6. Reverse Search
7. Single
8. Program Check
9. Previous-Track Skip
10. Play/Select
11. Random Play
12. Dub
13. Automatic/Manual Track Increment Selector
14. Track Increment
15. Finalize
16. Numeric Keys
17. A-B Repeat
18. Repeat
19. Speed Select
20. Record Button
21. Erase Button
22. Input Select
23. CD Sync
24. Stop
25. Pause
26. Next Track
27. Dual Playback
28. Forward Search
29. Record (CDR)-Deck Select
30. Record (CDR)-Deck Open
31. Record (CDR)-Deck Display Control
32. Power Off
33. Clear

IMPORTANT NOTE: Some of the remote's functions including Play, Pause, Stop, Search, Next and Previous Track, are shared between the two decks. Always remember the press the CDP Select button 4 to use the remote to control the Play Deck, or press the CDR Select button 29 to control the Record Deck.



Remote Control Functions

❶ **Power-On Button:** Press this button to turn the CDR 2 on. Note that in order for this control to function, the **Front-Panel Power Switch** 1 must first be pressed so that the unit is in the Standby mode.

❷ **Play (CDP)-Deck Display Control:** Press this button to cycle through the various time display options for the disc in the **Play Deck** 3. See page 17 for more information on time-display options.

❸ **Play (CDP)-Deck Open:** Press this button to open the **Play Deck** 3.

❹ **Play (CDP)-Deck Select:** Press this button to control or program the functions of the disc in the **Play Deck** 3.

❺ **Program:** Press this button to begin the programming sequence for one of the CD decks. See page 18 for more information on programming the CDR 2.

❻ **Reverse Search:** Press this button to play the selected disc in reverse to locate a desired passage.

❼ **Single:** When this button is pressed, the CDR 2 will function as a two-disc CD player/changer. In the Single mode, the audio output will be routed to all output jacks ❶❷❹❺❽❾ regardless of which CD deck is actually playing. See page 17 for more information on the Single-Play mode.

❽ **Program Check:** Press this button to check or edit a programmed playback sequence. See page 18 for more information on programmed playback.

❾ **Previous-Track Skip:** Press this button to skip backwards to the beginning of the track currently being played. Press it a second time to move back to the beginning of each previous track.

❿ **Play/Select:** This button has two functions. It will most often be used as a standard play button, but when setting up certain record functions, it is also used as an Enter or Select button.

⓫ **Random Play:** When the CD Deck is stopped, press this button to begin random play of all tracks on a disc.

⓬ **Dub:** Press this button to begin a dub. See page 20 for more information on dubbing.

⓭ **Automatic/Manual Track Increment Selector:** Press this button to select between automatic and manual track increments during a recording session. See page 20 for more information on track increments.

⓮ **Track Increment:** When the Manual mode for track increments is selected during recording, press this button to increase the track number. **NOTE:** This function does not operate during CD Sync or dub recording.

⓯ **Finalize:** Press this button when a recording is complete to initiate the finalization process. The **Play/Select** button 18❿ must be pressed within three seconds to activate finalization. Until this button is pressed and the finalization process is complete, CD-R discs may not be played on conventional CD machines. See page 22 for more information on Finalization.

⓰ **Numeric Keys:** Press these buttons to access a specific track for playback or during the programming process. See page 18 for more information on programmed playback.

⓱ **A-B Repeat:** Press this button to specify a segment of a disc for repeat play. See page 18 for more information on repeat play.

⓲ **Repeat:** Press this button once to repeat the current track. To repeat an entire disc, press the button twice.

⓳ **Speed Select:** Press this button to select the recording speed for internal dubs. See page 20 for more information on selecting the proper speed.

⓴ **Record Button:** Press this button to begin a manual recording.

㉑ **Erase Button:** Press this button to initiate the erasure of a track or of an entire CD-RW disc or to Unfinalize a disc. Note that erasure is only possible on CD-RW discs. See page 22 for more information on erasing discs.

㉒ **Input Select:** Press this button to select the input source (analog, digital-coax or digital-optical) for recording. See page 20 for more information on input selection.

㉓ **CD Sync:** Press this button once to begin an automated recording of a single track from an external CD player when a digital connection is used. Press it twice to begin automated recording of an entire disc. See page 21 for more information on CD Sync recording.

㉔ **Stop:** Press this button to stop playback or recording.

㉕ **Pause:** Press this button to momentarily pause playback. Press it again to resume playback.

㉖ **Next Track:** Press this button to skip forward to the next track on a disc.

㉗ **Dual Playback:** Press this button to enable both CD Decks to play back at the same time and function as separate, independent CD units. In this mode it is also possible to record from an external source while the Play Deck is functioning as a standard CD player. See page 17 for more information on dual-play capability.

㉘ **Forward Search:** Press this button to play a disc in a fast-forward mode.

㉙ **Record (CDR)-Deck Select:** Press this button to control or program the functions of the disc in the Record Deck 15.

㉚ **Record (CDR)-Deck Open:** Press this button to open the **Record Deck** 15.

㉛ **Record (CDR)-Deck Display Control:** Press this button to cycle through the various time-display options for the disc in the **Record Deck** 15. See page 17 for more information on time-display options.

㉜ **Power-Off:** Press this button to place the unit in a Standby mode.

㉝ **Clear:** Press this button to clear an item in a program sequence. See page 18 for more information..

Important Note: To prevent possible damage to your speakers or other components in your audio system, we strongly recommend that ALL system components, including the CDR 2, be turned off and unplugged from their AC power source when any connections are made or a new component is installed.

Locating the CDR 2
Since the CD transports in the CDR 2 are precision instruments, they are subject to interference from vibration. To minimize the possibility of skipping during playback or recording, it is recommended that the unit be placed on a level, solid, vibration-free surface.

When installing the CDR 2 in a cabinet or tight space, always make certain that there is enough room in front of the unit for the disc drawers to open fully, and that there is enough space above the unit so that discs may easily be inserted in the disc drawers.

In addition to the safety considerations outlined on page 4, it is also recommended that the CDR 2 not be placed in a location that is subject to direct sunlight or extreme heat or cold, as these conditions may damage the discs used in the player, or the player itself. Note that audio amplifiers or high-power receivers, as well as certain other electronic products, may generate significant heat. For that reason, do not place the CDR 2 directly on top of an amplifier, receiver, or other heat source. Always allow at least one inch of free space on all sides of the CDR 2, as well as other electronic products, to allow for proper ventilation.

The unit should also be kept away from sources of water or damp conditions.

Connections to Your Audio System
When connecting the CDR 2, think of the process as if your were connecting a standard CD player and a tape or cassette recorder, with the addition of the digital connections.

Play-Deck Connections
The rear-panel connections labeled "CDP" refer to the outputs of the **Play Deck** 3, which functions as a standard CD player. Connect the analog left/right CDP outputs ❶ to the CD inputs on your receiver, preamp or surround processor. For best playback results, a digital connection is recommended, using either the coaxial ❹ or optical ❾ outputs. Connect them to the matching coax or optical inputs of your receiver, preamp, processor or external digital decoder. Note that you may have to change a setting on the receiver or processor to link the digital input to the "CD" button or input selector. Consult the owner's manual on that device for details, as this configuration may vary from unit to unit.

Record-Deck Connections
The rear-panel connections labeled "CDR" refer to the inputs and outputs for the **Record Deck** 15. Depending on the capabilities of your receiver, preamp or processor, you may find it convenient to connect the analog inputs and outputs to the jacks marked for a tape recorder. As the CDR 2's functions resemble those of a standard tape recorder, this might make it easier for your select it as an input. Connect the analog CDR-Out jacks ❷ to the Play/In jacks of a Tape or Aux input on your receiver or preamp. Connect the CDR-In jacks ❸ to the Tape Rec/Out jacks on your receiver or preamp.

To play the output of the Record Deck through the digital decoder in your receiver or an external processor, connect the **CDR Coax-Out** ❺ or **CDR Optical-Out** ❽ jacks to the matching digital-input jacks on your receiver or processor. Note that you may have to change a setting on the receiver or processor to link the digital input to the "Tape" button or the specific input selector associated with the digital inputs. Consult the owner's manual on your receiver or processor for details, as this configuration may vary from unit to unit.

To make recordings from external digital sources, such as a CD, DVD or MD player, connect the **CDR Coax-In** ❻ or **CDR Optical-In** ❼ jacks on the CDR to the digital output jacks on your receiver or processor. If your receiver does not have digital-output jacks, you may connect the **CDR Digital Inputs** ❻❼ on the CDR 2 directly to the digital outputs on your CD player or other digital device. If the CD player has BOTH types of outputs, you may want to connect one to the input of your receiver and the other directly to the CDR 2.

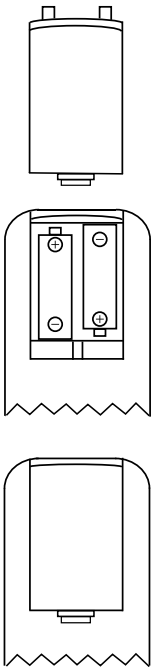
Connections to a portable digital CD or MD player may also be made by connecting the Coax Digital Output of the player to the Front-Panel Digital Input 6 on the CDR 2. Note that when both are digital inputs are connected, the CDR 2 will give priority to the front-panel input ❻. If it is impractical to disconnect the rear-panel input when you need to use the front-panel jack, simply turn off the device connected to the rear-panel input. This will stop the digital signal, and permit the front-panel jack to be used.

IMPORTANT NOTES ON DIGITAL CONNECTIONS:

COAX CONNECTIONS: Although digital-coax connections use the same type of "RCA" phono jack as standard analog signals, please take special care to connect digital signals only to digital jacks. In many cases, the digital jacks may be identified by an orange colored insert ring around the center of the jack. When making digital connections, be sure to use coax-interconnect cables, such as the one supplied with the CDR 2 or cables intended for video applications. Even though they have the correct type of RCA connector, do not use audio-interconnect cables that have twisted pair construction, as they are not appropriate for digital signal use. If you have any questions about the type of cables to use with the CDR 2, consult your dealer.

OPTICAL CONNECTIONS: There are a number of different types of optical connections, so make certain that you use only "TOS" type optical cables with the CDR 2. To ensure proper connection of optical cables, fully insert them into the jack until there is an audible click. This tells you that the connector has been completely inserted. Remember to save the plastic dust caps that cover the optical jacks, and replace them when a jack is not in use to prevent dust from entering the connection point.

Batteries
Insert the two AA batteries supplied with CDR 2's remote by turning the remote over so that the bottom of the remote is facing towards you. Gently lift the plastic tab on the battery cover up and away from you, and lift the lid off. Insert the batteries in the remote, being careful to follow the + and – polarity indications in the bottom of the compartment. Replace the cover by first seating the two small tabs into the mating holes at the top of the remote, and then gently push the cover down until the latch snaps into place with an audible click.



NOTE: When replacing batteries, it always a good idea to replace both at the same time. When the remote will not be used for an extended period of time, it is also a good idea to remove the batteries to avoid the possibility of damage due to corrosion. Batteries contain chemical substances and we recommend that you dispose of them properly and in compliance with any local regulations.

IR Remote Connections
If the CDR 2 is installed behind a cabinet or other obstruction that may block the path between the front-panel Remote Sensor 25 and the location where you will use the remote, an optional external IR sensor may be used. Connect the sensor to the **Remote IR In Jack** ⓾ on the rear-panel. This jack may also be connected to the IR Output jack of another compatible Harman Kardon component or a compatible IR system remote product.

You may also use the IR Sensor in the CDR 2 to send commands to other compatible remote products. Connect the **Remote IR Out Jack** ⓫ to the input of the other product or system.

Power Connections
Connect the **AC Power Cord** ❶ to an AC power source. the CDR 2 uses sensitive, high-performance computer-grade CD drives, and to protect them we recommend that you consider the use of a surge protector, just as you would for a computer.

If the rear-panel AC outlet on a receiver or other product is used, make certain that it provides at least 40 watts, and that the total power of all products connected does not exceed the maximum rated output of the product containing the outlets. If the CDR 2 is connected to a switched outlet, remember to turn on the outlet or product controlling it in order for the CDR 2 to operate.

CD Recording Basics

CD Recorders (CDRs) are similar to standard CD players, with the addition of the features and controls needed for recording. Functions such as play, search and programming for playback will be familiar, but the recorder will function slightly differently than what you may be used to for magnetic tape recorders.

Disc Types
Unlike a conventional CD player, the CDR 2 uses three types of discs, and it is important to understand how each one plays.

Both decks in the CDR 2 will play back any conventional CD that bears this logo.

Discs that bear this logo may be recorded on one time, and when they are finalized they will play in either deck in the CDR 2 or in any conventional CD player, including home, car and portable models. the **Record Deck 15** on the CDR 2 may also be used to record on these discs, and it will play CD-R/Audio discs even if they have not been finalized.

Discs that bear this logo may be recorded on, and they may also be erased and reused. They may be recorded on or played on the **Record Deck 15** of the CDR 2 and in other CD-RW recorders or CD-RW compatible players. They will NOT play back in most current CD players unless the player is CD-RW compatible.

Discs designed for use in computer CD-R drives **may not** be used for recording in the CDR 2. Only discs specifically designed for use in consumer CD audio recorders may be used. If you attempt to use a blank-computer-type recordable disc for recording on the CDR 2 you will see a DISC ERROR message in the **Information Display K** and recording will not be possible. However, discs that have been recorded in the CD-R drive of a computer may be played in the CDR 2, provided that they have been properly finalized in accordance with audio standard IEC958.

Note that the CDR 2 is specifically designed for the recording and playback of consumer audio discs, and cannot be used to copy data discs, DVD discs, or other optical discs used by video- or computer-game systems.

CDR Terminology and Display Messages
Compact disc recording has its own terminology, and some of the messages you will see when using the CDR 2 may be new to you. Before using the CDR 2, you may wish to familiarize yourself with some of the terms used by the CDR 2. Additional error message displays may occasionally appear. Please see page 23 for a complete explanation of those messages.

Finalize: This term refers to the process that completes the recording of a disc by recording a final Table of Contents and preparing the disc so that it may be played on other machines. A CD-R disc may not be played on other CD players until it is finalized. However, once the finalization process is complete, a CD-R disc may not be recorded on again. CD-RW discs only may be "Uunfinalized," so that additional tracks may be recorded on a disc.

TOC: Stands for Table of Contents and it refers to the data recorded on each CD that tells the player how many tracks are on the disc, the total time of the disc and the running time of each individual track. Each time a disc of any sort is placed in the CDR 2, you will see a TOC to indicate that the unit is reading this data from the disc. This is required to copy the track information to any recording.

OPC: Stands for Optical Processing Calibration. When you see this message in the **Information Display for the Record Deck K**, it means that the laser transport inside the unit is making the calibrations and adjustments needed so that the recording process is optimized for the specific disc in use.

BUSY: When you see this message, it means that the Record Deck is completing part of the record operation. When you see this message, do not press any buttons; simply wait until the message clears from the display.

DISC FULL: This message will appear when there is not enough room left on an unfinalized disc to record all the tracks you have programmed. When you see this message you may either erase tracks from a CD-RW disc to make room, or you must use a fresh CD-R or CD-RW disc.

Playback Basics

Playback of CDs on the CDR 2 resembles that for traditional CD players with a few exceptions to accommodate the availability of two separate playback decks. Before using the CDR 2, power-up the unit by pressing in the **Main Power Switch** 1 until it latches. Note that the **Status-Mode Indicator** 2 will turn green, indicating that the unit is on and functioning. At the same time, the Information Display 24 will illuminate and the legends behind the front-panel controls will also light up.

Once the **Main Power Switch** 1 has been turned on, the CDR 2 may be powered-on or -off using the remote control. Pressing the **Power-Off** button 32 on the remote will place the unit in a Standby mode, as indicated by the amber color of the **Status-Mode Indicator** 2. To turn the unit on using the remote, simply press the **Power-On** button 1.

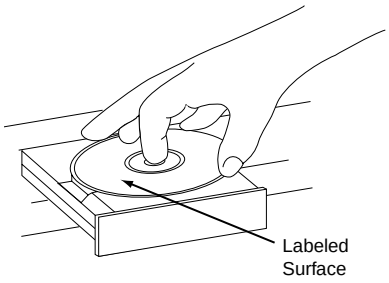
Note that when the unit is in the Standby mode, it is still drawing power from the AC main outlets. To turn the unit completely off, press in the **Main Power Switch** 1 slightly, and then release it so that it pops forward. When the **Status-Mode Indicator** 2 goes out, the CDR 2 is off and not drawing any power. When you will not be using the unit for an extended period of time, such as during a vacation, we recommend using the **Main Power Switch** 1 to turn the unit completely off.

Although compact discs are very reliable, rough handling may damage them. Avoid scratching the bottom (nonprinted) side of the discs, as this will affect playback of standard CDs and interfere with the recording of CD-R and CD-RW discs. It is also a good idea to always handle discs by their edges to avoid fingerprints which may also interfere with playback quality and possibly cause damage to the laser and lens assembly.

Loading and Unloading Discs

To load a disc, first open the desired CD deck by pressing the appropriate **Open/Close** button 7 14 3 30. The word OPEN will appear in the **Information Display** K. Always make certain that there is sufficient room in front of the unit for the disc drawers to open. Note that if either disc drawer is blocked, the drawer will stop at the blocked position and an ERROR message will appear. Press the appropriate **Open/Close** button 7 14 3 30 to reopen the drawer.

Load a disc in the tray with the printed (label) side facing up. Once the disc is seated, make certain that it is properly centered within the tray. When using 3" discs, take extra care to make certain that the disc is carefully centered within the smaller ridges in the disc tray.



To close the drawer, press the appropriate **Open/Close** button 7 14 3 30 or gently press on the outside of the front cover of the disc tray. When the drawer is closed the word CLOSE will appear momentarily in the **Information Display** K, and the letters TOC will begin to flash in the display once the drawer s completely closed.

If the disc is a standard CD or a finalized CD-R or CD-RW disc, TOC will flash while the unit reads the disc's Table of Contents information. Once that data is read, the **Information Display** K will show the total number of tracks and the total time of all tracks on the disc. The **CD Indicator** S will also light to indicate that a standard CD is in use.

When an unfinalized CD-R or CD-RW disc is placed in the **Record Deck** 15, the letters OPC will flash once the Table of Contents has been read. This indicates that the unit is optimizing its circuits for maximum compatibility with the specific recordable disc in use. the number and total running time of any tracks that have already been recorded will appear in the **Information Display** K, and the appropriate indicator S P will light to tell you if a CD-R or CD-RW disc is in use.

If a computer data disc is placed in the machine, a DATA DISC message will appear to alert you to the error. Data discs will not play and may not be recorded or dubbed in the CDR 2.

Using The Remote

The CDR 2's infrared remote control is designed to operate both CD decks, as well as control the playback programming and record functions. To allow for efficient use of the remote, it's operation is different from standard CD players. Some buttons are dedicated to one specific CD deck, while others are shared between the two decks.

No matter which deck is playing , the **Play (CDP)-Deck** and **Record (CDR)-Deck Display** 2 31 and **Open/Close** buttons 3 30 will always send a command to their respective deck. The other transport and programming functions, however, are shared. To use any of the transport controls, such as **Play** 10, **Stop** 24, **Pause** 25 or the **Search and Skip** buttons 6 9 26 28, the **Numeric Keys** 16 or the **Programming Keys** 5 7 8 11 18, first press either the **CDP button** 4 to command the **Play Deck** 3 or the **CDR** button 29 to command the **Record Deck** 15. When the button is pressed, a message reading CDP or CDR will appear in the appropriate **Information Display** K to confirm the selection.

To switch the remote from controlling one deck to controlling the other, simply press the **Select** button 4 29 for the deck you wish to control at any time.

Note that features relating to the recording process, such as **Speed** 19 and the double row of record-function buttons in the center of the remote 12 13 14 15 20 21 22 23 and the **Single/Dual** buttons 7 27 are dedicated feature buttons that do not require any special selection.

Playback Basics

Normal Play
To play a disc, first make certain that the unit is properly installed and that the **Main Power Switch** 1 is turned on. Turn the CDR 2 on by pressing the **Power-On** button 1 on the remote and note that the front-panel display will illuminate.

Insert a disc following the instructions shown on the previous page. To start the playback, press the Play button on the front panel for the appropriate deck 18 31 or press the Select button on the remote for the desired deck 4 29 and then press the Play button on the remote 10. The **Play/Pause Indicator** Q will show a right pointing triangle ▷ and the **Information Display** K will show the track number being played and the running time of the track. As each new track begins to play, the track time will reset to 00:00 and begin to count up for the new track.

NOTE: Remember that Unfinalized CD-R or CD-RW discs will only play in the **Record Deck** 15. If you attempt to play an Unfinalized disc in the **Play Deck** 3, a DISC ERROR message will appear to remind you to play the disc in the other deck.

To go directly to a specific track on a disk, enter the track number using the **Numeric Keys** 16. Note that when selecting a two digit track number, the second digit must be entered within two seconds after the first Numeric Key is pressed.

To play all of the tracks on a disc in random order, press the **Select Button** 4 29 for the desired deck, and then press the **Random** button 11. The unit will briefly examine all of the tracks on the disc and the **Random Indicator** A will illuminate. Each track will be played in a random order until all tracks on the disc have been played. Note that there will be a brief pause in between each track as the unit searches for the next track to play. During the search, the left two positions in the **Information Display** K will show a clockwise circle to confirm the search.

To momentarily stop the disc at any time, press the **Pause** button 25 19 30. When a disc is paused, the **Play/Pause Indicator** Q will add two vertical lines to indicate a paused disc. Press either the **Play** button 10 18 31 or the **Pause** button 25 to resume playback at the point where the disc was paused.

When there is only one disc in the unit, it will automatically stop when all tracks on a disc have played through. To stop playback at any time, press the **Stop** button 24 17 32 for the deck in use.

When there is a disc in each deck, the player will respond in one of two ways, depending on which way the dual-play setting is activated. In normal operation, when the disc in one drawer finishes, the disc in the other drawer will begin to play. When the **Dual** button 27 27 is pressed so that the **Dual-Play Indicator** J is lit, each deck will operate as a separate, single-play CD unit without regard to the status of the other deck. For complete information on Dual-Deck and Dual-Play operation, see page 17.

At the end of a listening session, remove the discs from the decks by following the instructions shown on the previous page. Do not leave the disc drawers open when the unit is not in use to prevent dust and dirt from entering the unit and to prevent damage to the disk drawer tray.

To place the unit in a Standby mode at the end of a listening session, press the **Power-Off** button 32. The word OFF will appear briefly in the **Information Display** K, any open disc trays will automatically close, and the **Status-Mode Indicator** 2 will turn amber.

Search
You may quickly scan through the contents of a disc while listening to the playback at high speed in forward or reverse. To move forward through a disc, press the **Forward Search** button 28 on the remote or press and hold the **Next** button 20 28 on the front panel that is appropriate for the deck in use. To move backwards through a disc, press the **Reverse Search** button 6 on the remote, or press and hold the **Previous** button 21 29 on the front panel that is appropriate for the deck in use. When using the remote, always remember to make certain that you have selected the deck you wish to control by pressing the appropriate selector button 4 29 before entering the desired remote command.

Track Skip
To move from one track on a disc directly to another, enter the number for the desired track with the **Numeric Keys** 16. The disc will pause briefly to locate the track, and then immediately play it. When entering a two digit track number, the second digit must be entered within two seconds of the first digit.

To move to the next track on a disc by cycling through the individual tracks, press the **Next** button 26 on the remote, or the appropriate front-panel **Next** button 20 28 for the deck in use. Additional presses of the button will move forward through the tracks on the disc.

When a disc is playing, press the **Previous** button 9 21 29 to return to the beginning of the track being played. Additional presses of the Previous button will move backwards through the tracks on the disc.

When a disc is stopped, you may press the Next or Previous buttons to locate a specific track that you wish to play. When the desired track number appears at the left side of the appropriate **Information Display** K, press the **Play** button 10 18 31 to hear that track.

Dual-Play Mode
Since the CDR 2 has more than one CD deck, you may play a disc in either drawer. When only one deck is playing, the unit is in the Single mode. In the Single mode, the audio output will be fed to all digital and analog jacks for both decks. This means you may select the input on your receiver, preamp or processor for either deck. For example, if you have the Play Deck connected to "CD" and the Record Deck connected to "Tape," when only one deck is playing, either input may be selected.

It is also possible to play two discs at once, using the Dual mode. To initiate dual-mode playback, press the **Dual** button on the front panel or remote 27 27. When the **Dual-Play Indicator** J is lit, you may play a different disc in both decks at the same time. The output of each deck will be sent to the its appropriate output jacks, and you will need to select the deck you wish to listen to using the input selectors on your receiver, preamp or processor. You may also use the output of one deck to feed your main-room system, while the second deck is used to feed a remote room.

As long as the **Dual-Play Indicator** J is lit, each deck functions as a separate CD player, and will respond to its own set of controls on the front panel for either the **Play Deck** 26 28 29 30 31 or **Record Deck** 17 18 19 20 21. To control the transports using the remote, remember to first press the Selector button for either the **Play/CDP Deck** 4 or the **Record/CDR Deck** 29, and then press the desired command function.

NOTE: When in the Dual mode, you may return to Single play mode by pressing the **Single** button on the remote 7 or the **Dual** button 27 on the front panel. However, pressing the **Single** button while both decks are playing, will automatically stop playback of the disc in the **Record Deck** 15 while the disc in the **Play Deck** 3 continues to play. The output of the play deck will be sent to both sets of output jacks.

Dual-Deck Operation
Since the CDR 2 has two separate CD decks, it may be used to function as two-disc changer, so that you can continually play two discs.

When the CDR 2 is in the Single-Play mode, as shown by the **Dual-Play Indicator** J *NOT* being lit, when the disc in one deck has played through to the end, the disc in the other deck will automatically begin to play. Each disc will play through, and when one deck is finished the other will start. To stop playback, press the **Stop** button 24 17 32 for the deck that is currently playing.

To have the CDR 2 function as a standard CD player, where the deck in use stops at the end of a disc, press the **Dual** button 27 27 until the **Dual-Play Indicator** J lights. In the Dual mode, each deck acts independently of the other and when the disc in one deck finishes, it stops unless one of the Repeat functions has been activated.

Time Display
The CDR 2's time display is capable of showing a wide range of information about the contents of a CD.

Once the disc's Table of Contents or TOC data has been read, the **Information Display** K for any deck that has a CD inside will show the number of tracks on the disc in the two left digits of the display, and the total running time of the disc. When the disc is playing, the tracks will count up as each new track is reached, and time display will show the elapsed time for the track being played.

To view the time remaining in the track being played, press the **Display** button 2 31 23 26 for the deck in use so that the REMAINING TIME **Indicators** M L illuminate. The **Information Display** K will count down the time remaining in the track, and at the start of the next track the counter will start to count down the running time of that track.

To view the total time remaining on the disc, press the **Display Button** 2 31 23 26 for the deck in use so that the **Total Time Indicators** N L illuminate. The **Information Display** K will show the total time remaining for all tracks on the disc and count down until the disc has finished playing. When the disc has played all the way through, the total number of tracks and the total running time of the disc will be displayed.

Headphone Listening
You may listen to the output of the CDR 2 through headphones at any time by simply plugging the headphones into the **Front-Panel Jack** 4. The volume of the headphone output may be adjusted with the **Headphones Level Control** 5. Note that changes to the headphone level will not alter the output settings to the analog outputs. Those levels are fixed, and the volume should be adjusted using your receiver, preamp or processor.

Note that when only one deck is playing back a disc, the output of that deck will be fed to the headphone jack. When the unit is in the Dual-Playback mode, only the output of the **Play Deck** 3 will be fed to the headphone jack.

Program Play

The CDR 2's advanced programming system enables you to preset the order in which tracks are played, to repeat one track or all tracks, or to repeat any segment of a disc without regard to track numbers.

Programming Play Lists
To program the order of playback for the tracks on a disc, insert the disc, let the unit read the Table of Contents information, and wait until the disc has stopped and the number of tracks and total running time is displayed. Next, select the deck that will be programmed by pressing the **CDP Select** button ❹ on the remote for the **Play Deck** 3 or the **CDR Select** button ㉙ on the remote for the **Record Deck** 15.

To begin the programming sequence, press the **Program** button ❺ and note that the PROG **Indicator** B will illuminate and the **Information Display** K will show 00 00 : 00.

Next, enter the track numbers to be played by pressing the **Numeric Keys** ⑯. For two-digit track numbers, be certain to enter the second digit within three seconds after the first number is entered. As each track is entered, the display will blink three times, alternating between two displays. The first display will show the track number just entered on the left side of the **Information Display** K under the **Track Indicator** O, while the right side will flash the number of steps that have been programmed. For example, after programming the first step to be track number 3, the display will flash 03 P-01.

Alternating with the track number and program step will be a display of the track and the total running time of all tracks that have been programmed so far. For example, a display of 06 11:25 will indicate that track number six was the last track programmed, and that the total time of all tracks so far is 11 minutes and 25 seconds. The **Total Time Indicators** NL will flash with this display to remind you of the display's contents.

These displays will alternate three times, and then show a steady display of the total time and last track programmed.

Continue to add tracks in the order you wish to have them played until the programming session is complete. You may add up to 20 tracks, repeating a track if desired, as long as the total number does not exceed 20. If you exceed the 20 track limit, the display will read FULL. Tracks may also be added using the **Next** ㉖ 20 28 and **Previous** buttons ❾ 21 29 to locate the track, and the **Program** button ❺ to enter that track to the programmed sequence.

When the complete list of tracks has been entered, press the **Play** button ⑩ 18 31. The tracks will then play in the order they have been entered. Note that a programmed list of tracks may also be recorded if the disc being programmed is in the **Play Deck** 3. Follow the instructions on page 20 for complete information on recording and dubbing.

Checking, Editing and Clearing Programmed Play Lists
Once you have entered a program list it will remain in the unit's memory until the disc is removed or the unit is turned off. Thus, if you play through a program list, simply press the **Play** button ⑩ 18 31 again to replay the list. If you find that you wish to check the list or make changes, that is also possible by following a few simple steps.

To scroll through a program list, press the **Program Check** button ❽. Each press of the button will move through the tracks that have been programmed. The display will alternate between the track number of the program step number (e.g. 12 P-03 tells you that track 12 on the disc is the 3rd program step) and the track number and the total running time so far in the program (e.g. 12 16:04 tells you that at this point you have programmed a total of 16 minutes and 4 seconds of material).

At any point in the list you may insert a new track by simply entering the track number using the **Numeric Keys** ⑯. Simply press the buttons that correspond to the number of the track you wish to add. Any tracks that are in the program will remain.

To remove a step in the program, first use the **Program Check** button ❽ to locate the track you wish to delete. Next, press the **Clear** button ㉝. The information in the display will blink and the step will be removed from the program list. Program steps need not be deleted in any order; as long as you have located a step in the program list, it may be erased.

To cancel an entire program list while the program is playing, press the **Program** button ❺ and note that the **Program Indicator** B will go out. To remove a total program list when the disc is stopped, simply open and close the disc drawer. Whenever a disc is removed or the unit is turned off, the program list is erased.

Repeat Programmed Play
The CDR 2's programming system enables you to repeat either a single track on a disc, the entire disk, or a specially programmed passage that you select.

Repeat One Track
To repeat the track you are currently listening to, press the **Repeat** button ⑱ and note that the **Repeat Indicator** D and the **Repeat-Status Indicator** E will both light **1**. If the track is changed by using the **Next/Previous Skip** button ❾ ㉖ 20 21 28 29 while the **Repeat 1** mode is active, the new track will now be repeated.

Once Repeat 1 playback has been started, it will continue until the unit is stopped by pressing the **Stop** button ㉔ 17 32, or the disc deck is opened by pressing the appropriate **Open/Close** button 7 14 ❸ ㉚. When playback is stopped, the Repeat sequence is erased and must be reentered if you wish to repeat a track on another disc.

Repeat All Tracks
To repeat all the tracks on a disc in order, press the **Repeat** button ⑱ twice while the disc is playing and note that the **Repeat Indicator** D and the ALL **Repeat-Status Indicator** E will light. Once the **Play** button ⑩ 18 31 is pressed, the disc will play through from beginning to end continually, until the **Stop** button ㉔ 17 32 is pressed. The Repeat All function may be cancelled at any time by pressing the **Repeat** button ⑱ once until both the **Repeat Indicator** D and ALL **Repeat-Status Indicators** E go out. The Repeat All Function is also canceled when the disc drawer is opened.

Repeat A-B
The CDR 2 may be programmed to repeat any section within a track, or a complete passage that includes material from a series of consecutive tracks.

To program the unit for A-B Repeat play, first play the disc and locate the point where you wish to begin the repeated section. At the start point, press the **A-B Repeat** button ⓱ and note that the **Repeat Indicator** **D** and the **Repeat-Status Indicator** **E** will show an **A** and flash. Let the disc play until the point at which the section to be repeated will end. At that end point, press the **A-B Repeat** button ⓱ again and note that the **Repeat-Status Indicator** **E** will stop flashing and will light showing `Repeat A-B`.

The unit will immediately begin to play the section you have programmed, and continually repeat it.

To resume normal play, press the **A-B Repeat** button ⓱. The **Repeat A-B Indicators** **DE** will go out, and the disc will continue playing through to the end. Stopping the disc or opening the disc drawer will automatically cancel the Repeat A-B programming.

Making recordings on the CDR 2 is simple and easy once you become accustomed to the basics of CD Recording. Before making your first recording, please take a moment to review the CDR Basics on page 14. In particular, you will need to become familiar with the types of discs that may or may not be used in the CDR 2. In addition, some terms used in the following pages may be new to you. The following definitions and information will help you to make CD recordings using the CDR 2's many features:

- The CDR 2 accepts analog inputs, digital coax inputs and digital-optical inputs. Before making a recording, be certain that you have selected the correct input.
- After a disc is recorded, it must be finalized. This process adds the final table of contents data to the disc and makes it playable on other machines. Until a disc is properly finalized, it may not be played on any other machine.
- The CDR 2 may record on either CD-R or CD-RW discs, but they must be of the type specifically designed for use in consumer-audio CD recorders. These discs may be recognized by looking for the words "Digital Audio" in the compact disc logo on the blank disc or its packaging. Discs with the logo reading only "Compact Disc/Recordable" are designed for computer data recording, and they will NOT work in the CDR 2.
- CD-R discs may not be erased or have material added to them once they have been finalized.
- At least four (4) seconds of blank recording time must remain on an unfinalized disc for recording to take place.
- The maximum number of tracks that may be recorded on a disc is 20. If more than 20 tracks are programmed, a FULL message will appear.
- Note that some CD-R/CD-RW audio recording discs may be used for single-speed recordings only. If you use a disc with such a warning, make certain not to dub at that 2x or 4x speed. However, the CDR 2 has been tested for compatibility with a wide range of blank discs from manufacturers throughout the world. In most cases, blank discs will produce high-quality recordings at any dub speed.
- In some rare cases, a CD player may not be compatible with CD-R discs. If you find that a CD-R disc plays in some players but not in others, the fault is most likely with the player, not with the recorded disc or the CDR 2. Remember that CD-RW discs made in the CDR 2 will play only in CD players that are specially designed to accommodate CD-RW discs.
- Some commercial CD discs may contain a copy protection data bit that will prevent the disc from being dubbed. In that case, the **Copy Prohibit Indicator G** will light to remind you that the inability to record is intentional, and not the result of a problem with the CDR 2.
- This product is equipped with the Serial Copy Management System (SCMS) to protect the rights of copyright owners. As a part of this system, it is possible to make a copy of most CDs for your own personal use. However, it is not possible to make a digital copy from another digital copy. It is possible to make an analog copy of a digital copy.
  RECORDINGS MAY BE MADE FOR PERSONAL USE ONLY, AND ANY UNAUTHORIZED COPYING IS SUBJECT TO THE APPLICABLE LAW.
- The CDR 2 will not copy DVD discs, computer-data discs, CD-based computer or video-game discs, or digital audio discs with a sample rate that is not compatible with the range of the CDR 2s sample-rate converter.

Recordings on the CDR 2 may be made in a number of ways:

- Discs may be dubbed using the playback deck on the CDR 2 as a source. These copies may be made in real time, at twice normal speed, or at four times normal playback speed.
- Recordings may be made from an external CD player or other digital source that is synchronized with the dub being made in the CDR 2.
- Recordings may be made from any compatible external digital source.
- Recordings may be made from an external analog source.

Disc Dubbing

The easiest way to make a copy of an entire disc is to use the CDR 2's internal dub capability.

First, insert a blank or unformatted disc in the **Record Drawer 15**. When the disc is inserted, the CDR 2 will examine it to determine if it is a CD-R or CD-RW disc, and optimize itself for the best possible recording. This is indicated by OPC message in the **Information Display K**.

Next, select a dub speed. The default speed is a real-time dub, where the recording takes as long as the actual running time of the disc. However, with the CDR 2 you may also select 2x dubbing or 4x dubbing. Press the **Speed** button **19 13** to select a speed as indicated by the **2x/4x Indicators F**. When no Speed Indicator lights, the unit is set to real-time recording. Note that the slower the record-dub speed, the more tolerant the unit is of errors on the blank disc. However, with most high-quality blank discs, the 2x and 4x speeds should not present a problem.

Place the disc to be dubbed in the **Play Drawer 3** and wait until the Table of Contents data is read and the **Information Display K** shows the track and running time data for the disc.

When you are ready to start the dub, press the **Dubbing Button 12 10**. The Play Deck will begin to read the track information again to make certain that there is enough space on the blank disc for the recording. If there is NOT sufficient room on the blank disc, a DISC FULL message will remind you to use another disc. During this process the **Dubbing Indicator H** will light, the **Record Indicator T** will flash and a BUSY message will flash in the Record Deck's **Information Display K**. When both Information Display Indicators return to normal, with indications of 01 00:00 press the **Select Button 10 18** to start the dub.

While the dub is in progress, you will see the track numbers and running time increase as the disc is copied. The Level Indicators will also flash but this is only for your reference, as record levels may not be adjusted during digital recordings. It is possible to listen to the disc while it is being dubbed by selecting the appropriate input on your receiver, preamp or processor:

Important Note: When a high-speed (2x or 4x) dub is being made, you will hear the playback at the faster speed. Fast speed playback increases the pitch of a sound, and when played back at high volume levels this may damage your speakers. DO NOT use high volume levels when listening to high-speed dubs while they are in progress.

The dub will stop automatically when the source disc has played through to the end. After the dub is finished, the Information Display will show an UPDATE message, and then return to normal operation. To manually stop a dubbing operation, press the **Stop button 24 17 32** for either deck.

As with all recorded CD-R/CD-RW discs, the disc must be finalized before it can be played in other machines. See page 22 for instructions on disc finalization.

Notes on Dubbing:

- If you wish to make a dub with the tracks in a different order from the original disc, omit tracks on a disc, or make a dub that mixes tracks from different discs, create a Program-Playback List before pressing the **Select** button ⑩⑱ to start the dub. Instructions for creating a Program List may be found on page 18. **NOTE:** Dubs containing Program Lists may only be made at the 1x speed. If you attempt to make a Programmed Dub at the 2x or 4x speed, the unit will automatically select the 1x speed.
- The Pause buttons do not operate while a dub is in progress.
- Tracks will be added automatically to mirror the track structure of the original disc.
- The Total Time indication of the recorded CD may vary slightly from the original due to variations in the spin speed of each drive, but this is normal. No information has been lost in the recording process.
- If the original disc being dubbed is a digital copy or if it contains copy-prohibit signals, the unit will automatically make a copy using an analog output from the disc.

CD Sync Recording

CD Sync recording allows you to make an automatic digital recording from an external CD player, DAT or MD. During CD Sync Recording, the record unit starts in sync with the source, and tracks are added automatically.

To make a CD Sync recording, first select the appropriate digital input by pressing the **Input** button ㉒㉒ until the desired COAX or OPTICAL indication appears in the **Record Deck Information Display** K. CD Sync recordings may not be made from an analog input.

Next, make certain that there is a fresh disc in the Record Drawer for the recording. Press the **CD Sync** button ㉓⑨ and note that the **Sync Indicator** I will light and the **Record Indicator** T will flash. Select the type of recording to be made:

- To record only the first track from the source player, press the CD Sync Button so that 1 TRK appears in the **Record Deck Information Display** K.
- To record the entire disc or tape, press the CD Sync Button so that ALL appears in the **Record Deck Information Display** K.

When the desired mode has been selected, start the playback from the source machine. The CDR 2 will automatically recognize the incoming digital data and begin recording. If the source material is a CD, the track numbering from the original disc will be carried over to the dub.

The recording will continue until the CDR 2 senses that the playback is finished when there in no incoming signal for more than three seconds. At that point the recording will stop. You may also stop the recording at any time by pressing the **Record Deck Stop** button ㉔⑰. If the Record Disc does not have enough space to complete the recording, the dub will stop and a DISC FULL message will be displayed.

After the recording is complete, an UPDATE message will appear briefly, and the unit will then return to normal operation. Remember to Finalize the recorded disc so that it may be used in other machines.

Recording from an External Source

To record from an external source, first place a CD-R or CD-RW audio disc in the **Record Deck** 15. Next, select the input to be used by pressing the **Input** button ㉒㉒. Pressing the button will cycle between the input choices, which will be shown in the **Information Display** K as COAX, OPTICAL and ANALOG. In addition, the **Digital Indicator** Y will light when either the coax or optical inputs are selected, and the **Analog Indicator** X will light when the analog inputs are selected. Press the **Record** button ⑧⑳ and then the **Play/Select** button ⑩⑱ to start the recording.

Note that when the coax digital input is selected, the connection may be made to either the rear panel **Coax Input** ⑥ or the **Front-Panel Digital Input** 6. If a signal is present at both coax inputs when a recording is made, the front-panel input will be used as the source.

Press the **Auto/Manual** button ⑬ to select how tracks will be numbered on the recorded disc.

- The default mode is Manual. In that mode for either digital or analog recordings, you must add track numbers manually by pressing the **Track Increment** button ⑭ when you wish to increase the track number.
- The Auto mode will add track numbers automatically, in one of two ways. When track data is present from a digital recording, it will be carried over to the new copy disc. Thus, when the CD being played moves from one track to the next track, the copy disc will also increase the track number by one. When recording from an analog source, activate the Auto mode by pressing the **Auto/Manual** button ⑬ once and note that the **Auto Indicator** W will light.
- In the Auto mode for recordings from an analog source or a digital source with no track data, the track number will be increased when the CDR 2 receives silence for 3 seconds. The recorder will also go into the Pause mode until the input source resumes. To activate the Auto mode, press the **Auto/Manual** button ⑬ once and note that the **Auto Indicator** W will light.

To prepare for a recording, press the **Record** button ⑳⑧. The **Record Indicator** T will flash, and the word BUSY will briefly appear in the **Information Display** K. When the Display returns to the track and running-time information, the unit is ready to record.

Start the actual recording by pressing the **Play/Select** button ⑩⑱. Note that the **Record Indicator** T will stop flashing and Information display will begin to show the running time of the recording and the track data. Depending on which mode of track increment has been selected as described above, track numbers must be increased manually or they will be added automatically. Regardless of which mode has been selected, a track may be added at any time by pressing the **Track Increment** button ⑭.

Note: If there is a pause in the playback signal for more than 3 seconds for digital recordings and 10 seconds for analog recordings, the CDR 2 will stop the recording. Also, when the Pause button is pressed during a recording, the track number will increase by one number and the recording will stop and must be restarted by pressing the **Select** button ⑩⑱.

Unlike conventional analog tape recorders, the CDR 2 does not require level setting when recordings are made from a digital source. Although the **Level Indicator C** will operate, this is only informative and the level may not be changed or adjusted. However, when you are making a recording from an external analog source such as a cassette recorder or the analog output of a receiver or preamp, you should adjust the input levels using the **Record-Level Control 16**. Adjust the levels so that the blue segments of the display are almost all lit, and the red segments flash only occasionally. If the red segments are constantly lit, the recording will be distorted and produce unacceptable quality.

To stop the recording, press the **Stop** button 24 17. The recording will automatically stop if it takes more space than is available on the CD-R/RW disc. A DISC FULL message will appear to remind you that a new disc is needed.

At the end of a recording, a BUSY message and an UPDATE message will appear briefly, and the unit will return to normal operation. Remember to Finalize the disc after recording so that it may be used in other players.

Finalizing CD-R and CD-RW Discs
Finalizing is a simple process that completes the recording of a disc so that it may be used in other players. When a recording is finished, a disc must be Finalized. Once that is done, a CD-R disc may not be changed or added to. CD-RW discs are "locked" once they are Finalized, and they must be Unfinalized to permit additional recording or erasure.

To Finalize a disc, place it in the **Record Drawer 15**. Once the disc's Table of Contents information has been read and the OPC process has been completed, press the **Finalize** button 15 12 and note that the **Finalize Indicator U** will begin to flash. Within three seconds, press the **Select** button 10 18 and note that the **Finalize Indicator U** will stop flashing.

The Finalization process will take between 60 and 90 seconds, depending on the length of material recorded on the disc. During the Finalization process the Record Deck will not accept any operating commands.

When the Finalization process is complete the **Finalize Indicator U** will go out, and the **R/RW Indicator P** will also go out as an indication that the disc is now playable on other players. The **CD Indicator S** will remain lit.

Unfinalizing and Erasing CD-RW Discs
CD-RW discs are unique in that they are both recordable and rewritable. This means that you may use them over again like a cassette tape. However, the process of reusing a CD-RW disc is slightly different from that used with tapes.

Unfinalizing a CD-RW Disc
To keep the material that is already recorded on a CD-RW disc but to add an additional track and erase single tracks, you must first unfinalize the disc. To do that, place the CD-RW disc in the **Record Deck 15** and wait until the Table of contents data has been read.

Press the **Erase** button 21 11 twice and check to make sure that the **Erase Indicator V** flashes and the word TOC appears in the **Record Deck Information Display K**. Within three seconds, press the **Select** button 10 18 to start the process. The **Erase Indicator V** will remain lit and stop flashing, and the **Information Display K** will switch to OPC and then back to TOC.

When the process is finished, the **Erase Indicator V** will go out, and the display will return to normal. The disc is now ready to have single tracks removed or additional tracks added.

Erasing an Entire CD-RW Disc
Erasing the entire contents of a disc is simple, and it does not matter if the disc has been finalized or not. To erase the disc, press the **Erase** button 21 11 twice if the disc has *NOT* been finalized and once if it has been finalized, so that the word DISC appears in the **Information Display K** and the **Erase Indicator V** flashes. To start the erasure, press the **Select** button 10 18 and note that the **Erase Indicator V** will stop flashing. The erasure process takes about a minute, and it is complete when the Information Display resets to 00 00:00 and the **Erase Indicator V** goes out. The disc is now totally erased and may be reused.

Erasing a Single Track
The individual tracks on a CD-RW disc may be erased one at a time, starting with the last track on the disk, or you may erase more than one track. Note that before individual tracks may be erased the disc must be unfinalized. If the disc is finalized, follow the instructions above for unfinalizing before proceeding with these steps.

To erase only the last track, press the **Erase** button 21 11. Note that the **Information Display** will display 01 TRK and the **Erase Indicator V** will flash. Press the **Select** button 10 18 within three seconds and note that the Erase Indicator will stop flashing. When the **Erase Indicator V** goes out the **Information Display K** will show the total number of tracks that now remain on the disc.

You may erase more than one track, counting backwards from the last track. First, press the **Erase** button 21 11. Note that the Information Display will display 01 TRK and the **Erase Indicator V** will flash. Press the **Next** button 26 20 or **Previous** button 9 21 until the number of tracks to be erased appears in the **Information Display K**. For example, when 06 TRK appears in the display a total of six tracks will be erased, counting back from the last track on the disc. Next, press the **Select** button 10 18 within three seconds of making the track selection and note that the **Erase Indicator V** will stop flashing. When the **Erase Indicator V** goes out the **Information Display K** will show the total number of tracks that now remain on the disc.

Important Note: Tracks at the beginning or in the middle of the disc may not be erased until all of the discs after them have been erased.

Important Note on Erasure and Finalization Times: Regardless of the speed at which a disc was recorded, the CDR 2 will erase and finalize discs at the 4x speed to minimize the length of the process. However, in some cases it may be necessary for the unit to repeat the erasure or finalization due to the nature of an individual disc. For that reason, it is normal for the time required to complete these steps to vary from one disc to another.

TROUBLE SHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE	SOLUTION
Unit does not operate when Standby switch or remote Power-On is pressed	• No AC power • Main Power Switch is off	• Make certain AC power cord is plugged into a live outlet. • Check to see if AC outlet is switch controlled. • Turn on Main Power
Remote does not function	• Wrong deck selected • Dead batteries • Sensor blocked	• Press the CDP button to control the Play Deck; press the CDR button to control the Record Deck • Replace both batteries • Remove obstructions from front panel or connect a remote sensor to the Remote-In Jack
Disc does not erase	• CD-R disc in use	• CD-R discs do not erase. Use a CD-RW disc
Recorded CD-R disc does not play in another CD player or DISC ERROR message appears in Play Deck	• CD-R disc not finalized	• Finalize the CD-R disc in the CDR 2's Record Deck (see page 22)
Recording suddenly stops	• Input source stopped or paused	• Recordings will always stop when the input source is paused for more than 3 seconds for digital recordings and 10 seconds for analog recordings

ERROR MESSAGES

ERROR MESSAGE	EXPLANATION AND PROBABLE CAUSE	SOLUTION
CHECK DISC	• A record-related button has been pressed when a Finalized disc is in the Record Deck 15 • A record-related button has been pressed when a standard CD is in the Record Deck 15	• Unfinalize the disc to add tracks to a CD-RW disc • Replace the disc with a blank CD-R or CD-RW disc • Replace the disc with a blank CD-R or CD-RW disc
DATA DISC	• A non-audio CD-ROM or a CD-Video disc has been placed in the machine	• Only CD Audio and DTS discs will play in the CDR 2; replace the disc
DISC ERROR	• An Unfinalized disc has been placed in the Play Deck 3 • A DVD disc has been placed in the unit	• Finalize the disc (see page 22) • Replace the disc. The CDR 2 does not play or dub DVD discs
DISC FULL	• There is not enough time left on the disc to complete a planned recording	• Use another blank CD-R or CD-RW disc • Erase one or more tracks on a CD-RW disc
ERROR	• The dsic is not seated properly • There is a problem with the disc	• Open the drawer and check to see that the disc is properly seated • Try another disc
FAILED	• A dub has not been completed properly	• Check the play disc • Repeat the dub process
FULL	• More than 20 tracks have been programmed	• Clear all programmed tracks over 20 (see page 18)
NO AUDIO	• A record-related button has been pressed when a non-audio disc is in the Record Drawer 15	• Replace the disc with a blank CD-R or CD-RW Audio disc
SVC-1	• There is an internal problem with the CDR 2	• Contact an authorized Harman Kardon service depot

Technical Specifications

Signal Format

Playback Sampling Frequency	44.1 kHz
D/A Conversion	96kHz, Multi-Bit Delta-Sigma Conversion
Oversampling	128 Times

Playback Specifications

Frequency Response	2Hz – 20,050Hz
Playback S/N	105dB
Playback Dynamic Range	105dB
Playback THD	0.005% / –88dB
Analog Audio Output	2V RMS, ± 2dB
Digital-Coaxial Output	0.5 Vpp/75Ω
Headphone Output	1V RMS/32Ω Load

Record Specifications

Digital Input Sample Rates	32kHz – 96kHz
Recording S/N: Analog	91dB
Recording S/N: Digital Dub Mode	Equal to Source
Recording S/N: Digital External Source	Source –10dB
Recording Dynamic Range	91dB
Recording THD	0.005% / –85dB
Analog Input Sensitivity	330 mV RMS 47kΩ = 0dB
Digital Inputs (Direct Recording)	44.1kHz, ±100 ppm/min.

General

Power Requirement	120VAC/60Hz
Power Consumption	48 Watts
Dimensions	
Width	17.3"/440mm
Height	4.4"/112mm
Depth	14.2"/363mm
Weight	13.2 lb/6 kg

Depth measurement includes knobs, buttons and connection jacks.
Height measurement includes feet and chassis.
All features and specifications are subject to change without notice.

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A Harman International Company
250 Crossways Park Drive, Woodbury, New York 11797
www.harmankardon.com
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Part #3828SND043A